Section 4 - Host Controller

The following paragraphs describe the components in the Workstation's Host Controller subsystem. The information is organized as follows:

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Please refer to **Workstation Interconnect Diagram 00-878981** as you read the following sections.

Host Controller

The Host Controller provides primary control of the entire imaging system. It interfaces with every major subsystem in the Workstation, and communicates with intelligent devices in the generator through the ArcNet controller on the **System Interface PCB**.

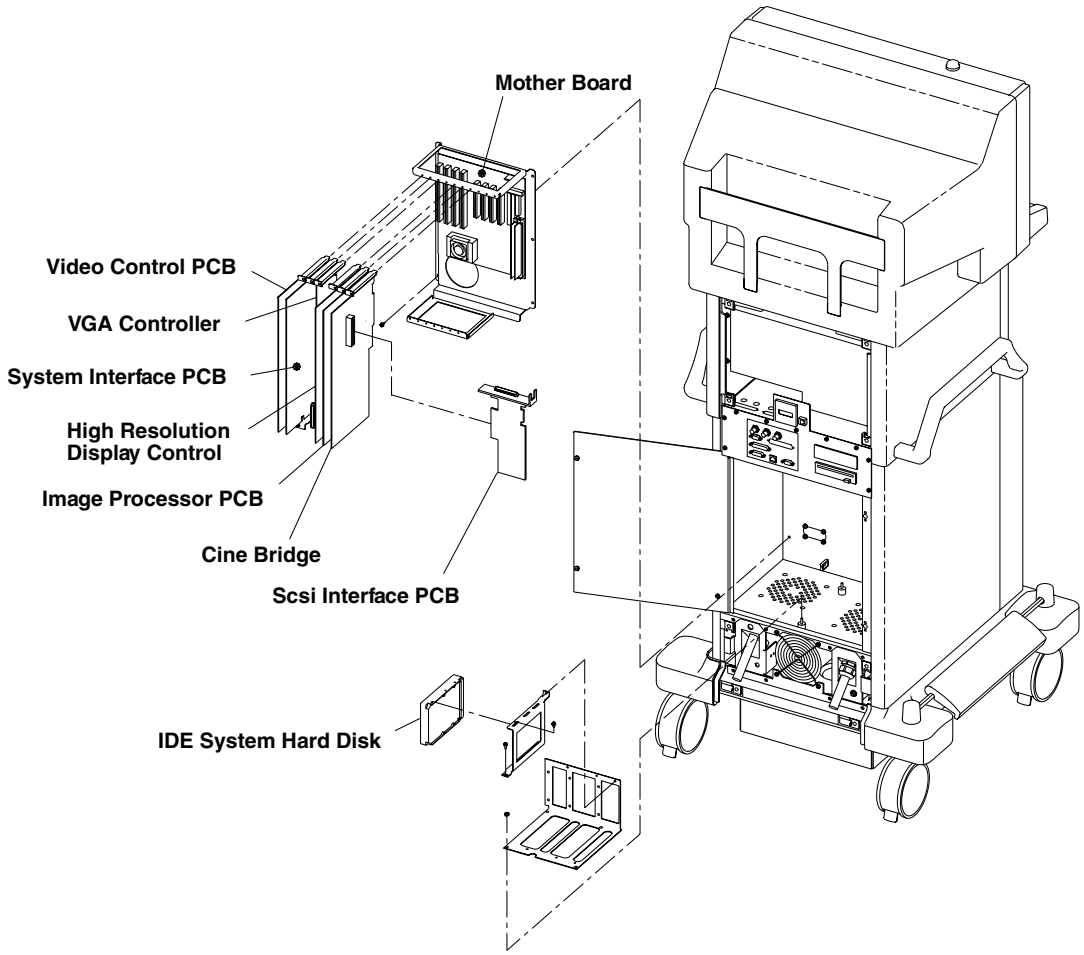
Physical Configurations

The following illustrations show the two versions of the Host Controller hardware.

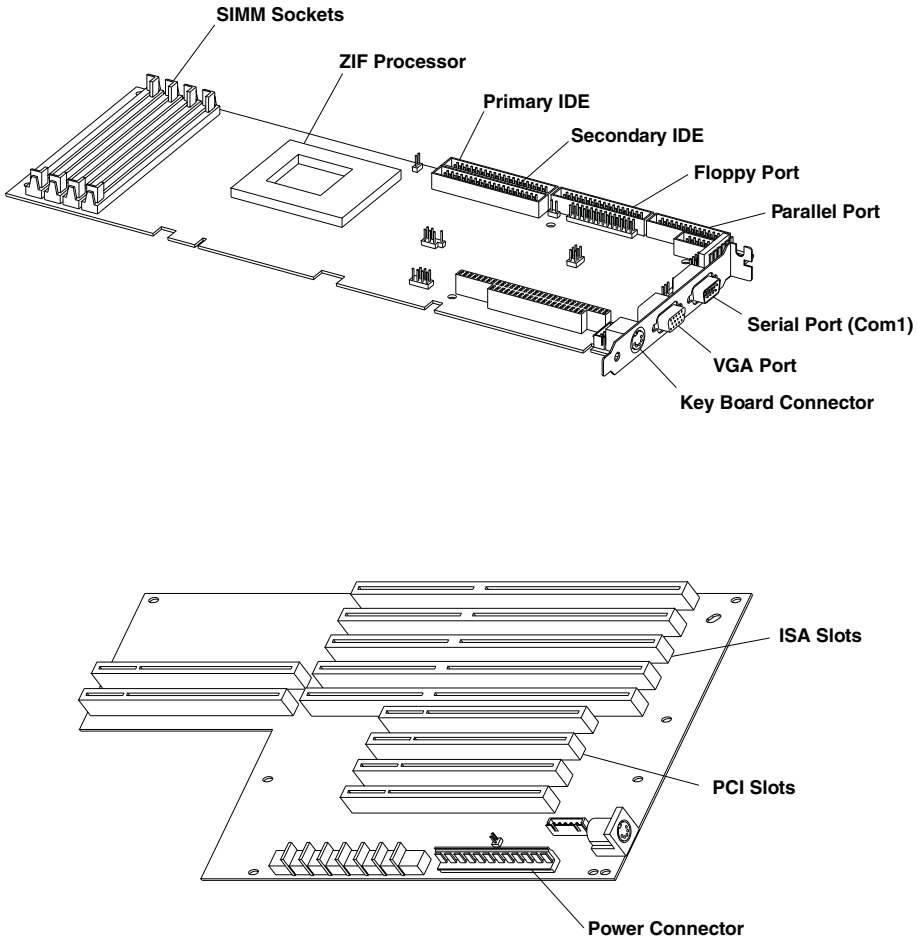
Page 4-5 shows an early Host Controller, which consists of a standard Socket 7 motherboard equipped with appropriate peripherals mounted in the Workstation's Electronics Enclosure.

The illustration on **page 4-6** shows upgraded components in the current version of the Host CPU. This current version uses a **Passive Backplane** equipped with a **Single Board Computer** and appropriate peripherals.

Despite their many physical differences, earlier and current Host CPU systems work similarly and perform the same functions. Both systems mount in the Workstation's Electronics Box. The current configuration is easier to troubleshoot and maintain because the Single Board Computer is far easier to access and replace.



Exploded View of Workstation (Earlier Version)



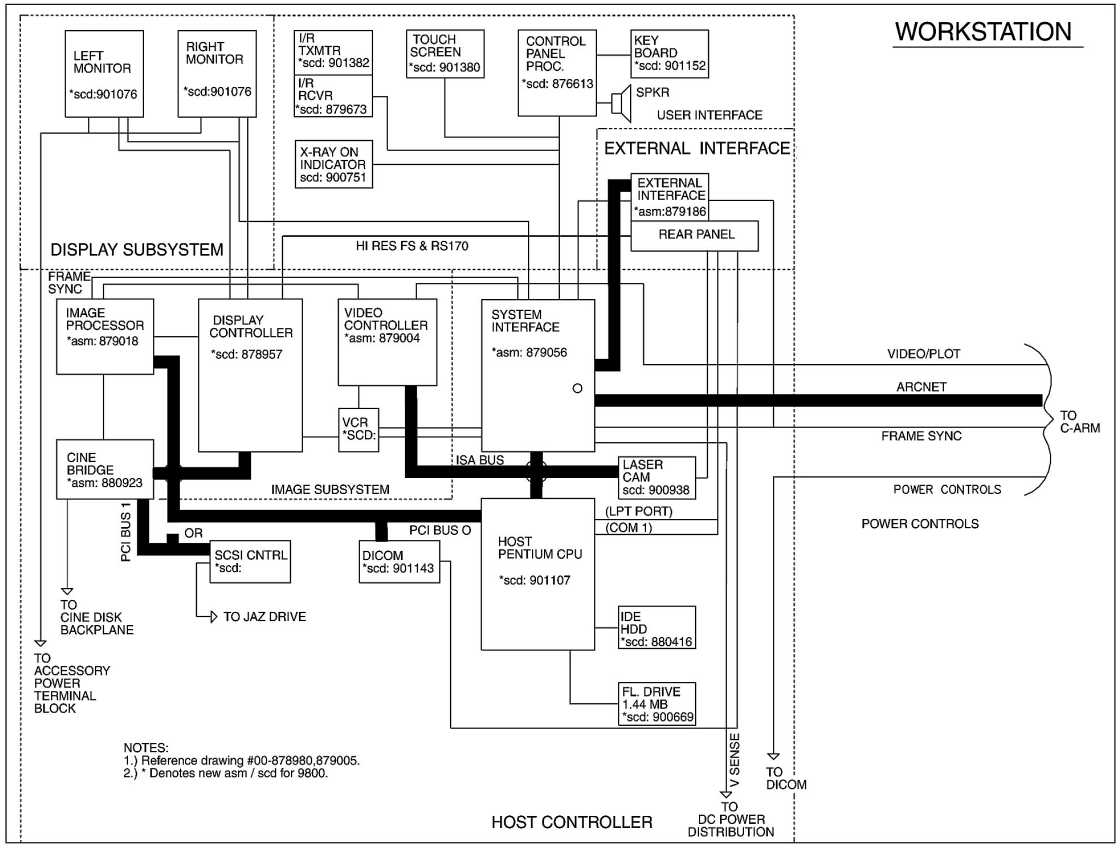
Single Board Computer and Passive Backplane

Functional Description

The following block diagram shows how the Host Controller interfaces with the rest of the system. The Host Pentium CPU block in the diagram refers to the Pentium motherboard in earlier systems and to the Single Board Computer/Passive Backplane combination in current systems.

The Host Pentium CPU executes program code it loads at bootup. The code loads from the IDE Hard Disk Drive, but can also load from the Floppy Disk Drive if a bootable disk is mounted in this drive when the operator turns the Workstation on. The Laser Camera Interface, System Interface, and Video Controller reside on the Host CPU's 16-bit ISA bus and communicate with other system devices over dedicated lines. The Display Controller, Image Processor, DICOM controller, and Cine Bridge reside on the 32-bit PCI 0 bus and communicate over dedicated lines as shown on the diagram. The Cine Bridge generates PCI bus 1, which communicates with the SCSI controller. The SCSI controller is currently dedicated to the "Removable Dynamic Digital Disk", which is commonly called the Jaz drive.

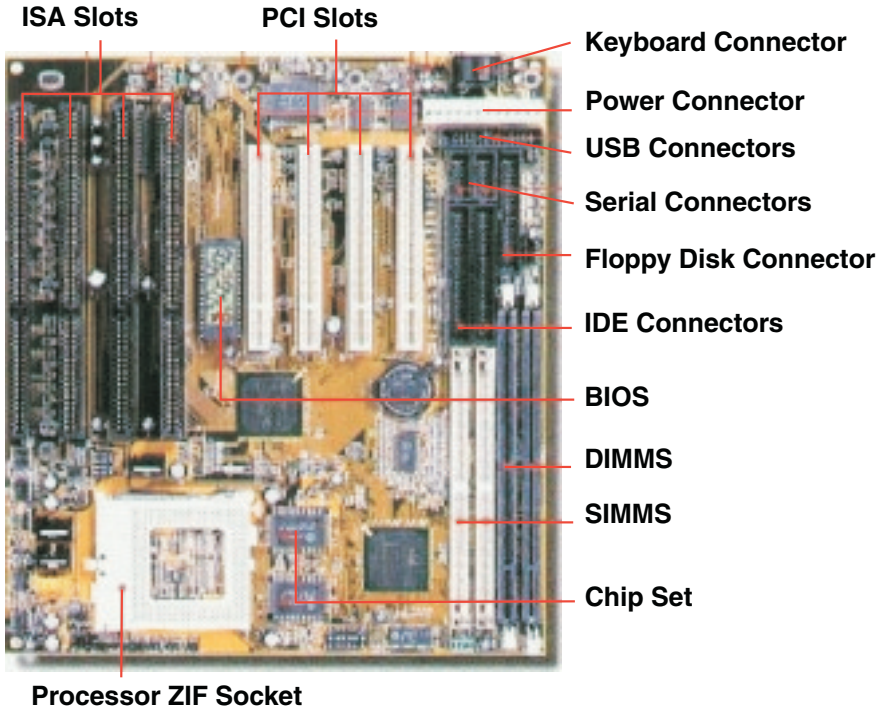
The System Interface PCB generates the ARCNet, the principal communication path between the Host CPU and intelligent devices.



Host CPU Block Diagram

Host Pentium CPU Motherboard

The following paragraphs describe the Host Pentium CPU motherboard, which serves as the Host Controller in earlier OEC Workstations.



Host Pentium CPU Motherboard

Description

The Host Pentium CPU motherboard is a standard Socket 7 motherboard. It is a four-layer PCB with the Baby AT form factor size of 22 cm by 25 cm (8.7” x 9.8”). It has the following features:

Processor: Single ZIF socket 7 with Pentium 233 MHz processor.

Chipset: Intel 430TX (82439TX, 82371AB)

Expansion Slots: Four 32-bit PCI slots. Four 16-bit ISA slots.

Cache: 512K.

Memory: Provides two 72-pin SIMM Sockets and two 168-pin DIMM SDRAM (or RAM) sockets. Equipped with 4 Mb of SDRAM.

On-Board IDE: IDE connector to support IDE hard drive.

On-Board I/O: Two serial ports, one parallel port, one floppy disk connector, one PS/2 mouse cable connector.

BIOS: Flash ROM with power management, and Plug and Play capabilities.

Location

The Host Pentium CPU motherboard resides in the Workstation’s Electronics Box as shown on **page 4-5**.

Circuit Description

The Host Pentium CPU Motherboard is a purchased part, and no schematic is available.

Test Points

None available for servicing purposes.

Circuit Breakers and Fuses

None.

Troubleshooting

The best way to check the Host CPU for proper operation is to watch for CMOS or memory errors on the Service Monitor while the system boots up.

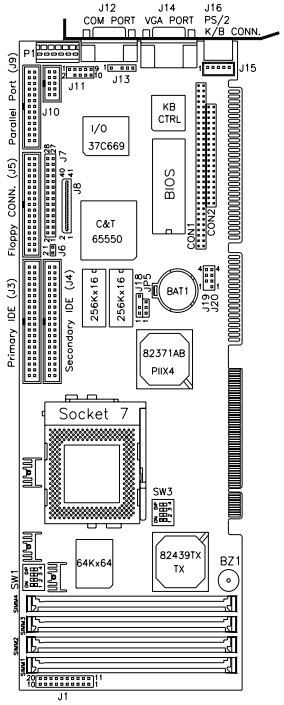
Removal and Replacement

If the Host Pentium CPU motherboard fails, you must remove it and upgrade the system by installing the Passive Backplane PCB and Single Board Computer. Follow these steps:

1. Disconnect Workstation's power plug from AC outlet.
2. Remove Workstation's Rear Cover.
3. Loosen screws that secure cover to Workstation's Electronics Box, and open cover.
4. Carefully remove all printed circuit boards that plug into Host Pentium CPU motherboard. Tag all wiring that you might have trouble reconnecting later. Store each removed PCB in an antistatic bag to avoid damage from electrostatic discharge.
5. Disconnect and tag all power and I/O connectors that mate with motherboard.
6. Remove torx panhead screws that secure motherboard to chassis.
7. Remove motherboard from Workstation.
8. Install Passive Backplane in Workstation chassis. Secure Passive Backplane using torx screws you removed in step 6.
9. Install all connectors you removed in step 5 that must connect to the Passive Backplane. In most cases, this will be just the power supply connectors. Be careful to observe proper polarity and alignment of each connector.
10. Carefully reinstall each PCB you removed in step 4. Be careful to properly reinstall all wiring.
11. Connect Workstation's power plug to active AC outlet.
12. Power up system and check for proper operation.
13. Close cover to Workstation's Electronics Box. Secure captive fasteners you loosened in step 3.
14. Install Workstation's rear cover.

Single Board Computer

The following paragraphs describe the Single Board Computer PCB, which along with the Passive Backplane serves as the Host Controller in the current OEC Workstation.



Single Board Computer

Description

The Single Board Computer (SBC) is a PCI Pentium CPU board that is designed for use with a Passive Backplane. This arrangement does much to enhance system serviceability. The SBC features a ZIF Socket 7 design. The microprocessor currently in use is the 233 MHz Pentium MMX.

The Single Board Computer has an on-board temperature sensor that sounds the audible alarm (BZ1) when the microprocessor temperature exceeds a safe heat level. BIOS power management functions slow down the CPU clock, turn off the monitor screen and system fan, and stop the hard disk drive spindle from turning during prolonged idle periods.

The Single Board Computer has these features:

Processor: 233 MHz Pentium MMX.

Chipset: Intel 430TX PCIset with built-in PCI EIDE

Expansion Slots: None. Single Board Computer must be used with Passive Backplane, described below.

Cache: 512K.

Memory: Provides two 72-pin SIMM Sockets and two 168-pin DIMM SDRAM (or DRAM) sockets. Equipped with 4 Mb of SDRAM.

On-Board IDE: Has Primary and Secondary IDE connector.

On-Board I/O: Two serial ports, one parallel port, one floppy disk connector, one PS/2 mouse cable connector.

BIOS: Flash ROM with power management, and Plug and Play capabilities.

VGA Display: C&T 65550 VGA chip on board.

Location

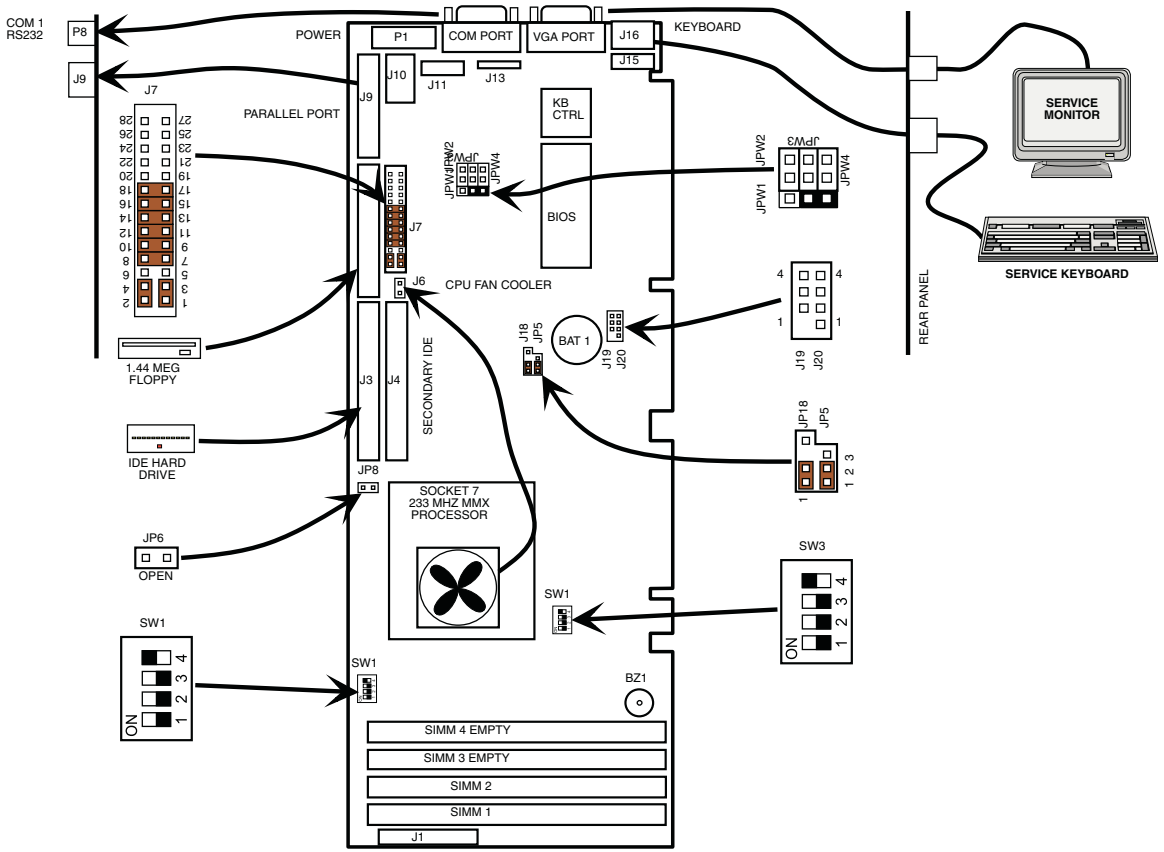
The Single Board Computer mounts in PCI/ISA Slot 1 on the Passive Backplane PCB, which is described in the following paragraphs.

Circuit Description

The Single Board Computer is a purchased part, and no schematic or detailed circuit description is available.

The following paragraphs describe the switches, jumpers, and connectors you must deal with when you upgrade to or replace a Single Board Computer.

Please refer to the illustration shown on the following page to identify individual components.



Single Board Computer Components

The following paragraphs describe switches, connectors, and jumpers on the Single Board Computer PCB. The descriptions appear in clockwise order starting with J1 at the bottom of the board.

J1 - Front Panel Bezel Connector

This connector is not used in the OEC Workstation. Normally it would interface with a reset button, hard disk activity LED, turbo LED, speaker, and other devices on the front panel bezel of a personal computer case.

SIMM Sockets

These sockets hold up to 256 Mb of FPM/EDO DRAM. Presently only SIMM1 and SIMM2 are populated with a 32 Mb SIMM in each socket.

SW1 and SW3 - CPU Frequency Selectors

To configure these switches for the 233 MHz Pentium MMX CPU, set all switches to OFF except for SW1-4.

JP6 - Use Unknown

The use or function of this jumper is not detailed in vendor data. Leave it open.

J3, J4 - IDE Connectors

J3 is the 40-pin Primary IDE connector for the system Hard Disk drive, which resides in the Electronics Box as shown on **page 4-5** of this section. When connecting the Hard drive's flat ribbon cable to the Single Board Computer, orient the tracer on the flat ribbon cable to the pin 1 end of J3. J4, the Secondary IDE connector, is not currently used.

J5 - Floppy Drive Connector

J5 is the 34-pin connector for the Floppy Disk drive, which mounts at the rear of the Workstation, as shown on **page 4-54** of this section. When connecting the Floppy drive's flat ribbon cable to the Single Board Computer, orient the tracer on the flat ribbon cable to the pin 1 end of J5.

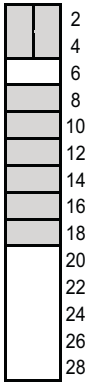
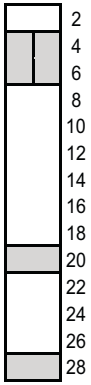
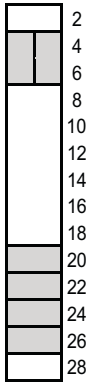
J6 - Microprocessor Fan Power

This connector supplies +12 Volts DC to the cooling fan mounted on the Pentium CPU. Pin 1 of this connector is positive.

J7 - COM2 Port Configuration Jumpers

Jumpers on J7 determine the configuration of Com Port 2, which is located on J10 of the Single Board Computer. Unlike COM1, which is fixed for RS-232 use only, COM2 is selectable for RS-232, RS-422, or RS-485. Since COM2 is not currently used, it really doesn't make much difference how these jumpers are installed.

The following table shows how to install jumpers to configure COM2. The table is included for future reference.

COM 2			
JUMPER SETTING (PIN CLOSED)	1-3 2-4 7-8 9-10 11-12 13-14 15-16 17-18	3-5 4-6 19-20 27-28	3-5 4-6 19-20 21-22 23-24 25-26
			
	J7	J7	J7

COM2 Port Configuration Jumpers

J9 - Parallel Port Connector

J9 on the Single Board Computer connects to J9 on the Workstation's rear panel. This port serves as the interface for the optional Film/Paper Printer, but it can be used for other devices.

J10 - COM2 Serial Port

J10 is a muti-purpose serial port that is configured by jumper placement on J7. You can set this port up to function as an RS-232, RS-422, or RS-485 interface. J2 is not currently used in the OEC Workstation.

P1 - Power Connector

This connector is not used. The Single Board Computer gets its power from the Passive Backplane PCB.

J12 - COM1 Serial Port

This connector cables to P8 on the Workstation's rear panel.

J13 - IrDA Connector

This connector handles wireless infrared communication with a keyboard or a mouse. It is not used on the OEC Workstation.

J14 - Service Monitor VGA Connector

This connector cables to the Workstation's rear panel VGA connector. You will typically use this connector to drive the Workstation's VGA service monitor.

J15 - External Keyboard Connector

This connector is not used. The Workstation's service keyboard and operator keyboard both use different circuitry.

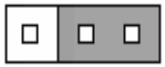
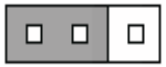
J16 - Service Keyboard Connector

This connector cables to the keyboard connector on the Workstation's rear panel, and supports the Service Keyboard.

JP5 - Clear CMOS Contents

CAUTION: *Contact the factory before resetting CMOS contents.*

Momentarily reposition this jumper to short pins 2 and 3 to reset CMOS contents on the Single Board Computer. This is a last resort when you cannot use setup to correct CMOS errors.

JP5	SETTING	FUNCTION
	Pin 2-3 short/closed	Clear CMOS content
	Pin 1-2 short/closed	Normal Operation

Clear CMOS Jumper

JPW1 Through JPW4 - Use Unknown

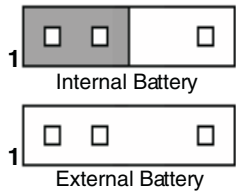
The use or function of these jumpers is not detailed in vendor data. **A single jumper must be installed as shown on page 4-16**.

J19, J20 - USB Connectors

These two jacks connect to the high-speed Universal Serial Bus on the Single Board Computer. These ports are not used in the OEC Workstation.

J18 - Battery Connectors and Jumpers

The 4-pin connector shown next allows you to connect an external battery to the Single Board Computer to maintain the information stored in the CMOS RAM when the built-in coin cell battery becomes weak.



J18 PIN#	SIGNAL NAME
1	GROUND
2	BATTERY GND
3	N.C.
4	VCC

External Battery Connector

Test Points

There are no accessible test points on the Single Board Computer. An extender card is not supplied.

Circuit Breakers and Fuses

There are no circuit breakers and fuses on the Single Board Computer.

Troubleshooting

The best way to check the Host CPU for proper operation is to watch for CMOS or memory errors on the service monitor while the system boots up.

Removal and Replacement

The following paragraphs describe how to replace the Single Board Computer.

1. Turn off power to Workstation.
2. Remove Workstation's Rear Cover.
3. Loosen screws that secure cover to Workstation's Electronics Box, and open cover.
4. Remove the 6-32, ½" Torx screw and Retainer Board that secure Single Board Computer to Passive Backplane.
5. Remove the 6-32, 3/8" Torx screw.
6. Carefully withdraw Single Board Computer from Electronics Box.
7. Disconnect all ribbon and power cables from Single Board Computer. Tag all wiring you might have trouble installing later.
8. Connect wiring you removed in step 7 to replacement Single Board Computer.
9. Install Single Board Computer into Passive Backplane.
10. Reinstall and secure mounting hardware you removed in steps 4 and 5.
11. Turn on Workstation and check system for proper operation.
12. Close and secure cover to Workstation's Electronics box.
13. Install Workstation's Rear Cover.

Passive Backplane

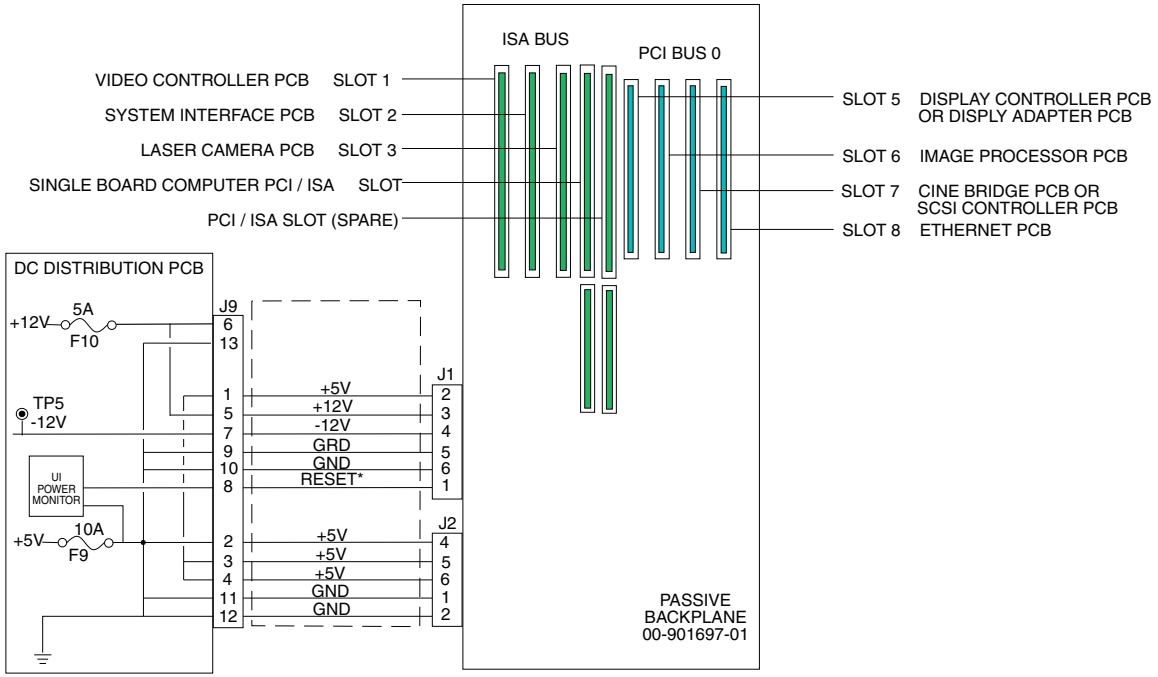
The Passive Backplane shown on **page 4-6** provides bus slots for all Host CPU ISA and PCI PCBs that mount in the Electronics Box. It also conducts DC power from the DC Distribution PCB to these boards. It has two PCI/ISA slots, one of which serves as the mounting point for the Single Board Computer. The other PCI/ISA slot on the Passive Backplane is empty.

Location

The Passive Backplane resides at the rear of the Electronics Box, and serves as the motherboard for circuit boards that reside in the box.

Circuit Description

There is no active circuitry on the Passive Backplace. It simply routes power and bus signals as shown in the following block diagram.



Passive Backplane Functional Diagram

Test Points

There are no test points on the Passive Backplane.

Circuit Breakers and Fuses

There are no circuit breakers or fuses on the Passive Backplane.

Troubleshooting

Mechanical or thermal damage are the most likely causes of trouble on the Passive Backplane. A damaged edge connector on a card slot is the most likely scenario. You should not attempt to repair a damaged edge connector in the field. Instead, replace the Passive Backplane following the procedure outlined below.

If any PCB plugged into the Passive Backplane gives a failure indication, try to re-seat the PCB first. If that does not fix the problem, replace the offending PCB. If the problem persists, carefully inspect the Passive Backplane PCB and connectors for signs of damage. If the problem persists, replace the Passive Backplane.

Removal and Replacement

Follow these steps to replace the Passive Backplane.

1. Turn off power to Workstation.
2. Remove Workstation's Rear Cover.
3. Loosen screws that secure cover to Workstation's Electronics Box, and open cover.
4. Carefully remove each PCB that plugs into the Passive Backplane. Tag all wires you might have trouble reconnecting later.
5. Disconnect the power cables from to J1 and J2 on the Passive Backplane.
6. Remove all nine 6-32, ½" torx screws and corresponding #6 lockwashers that secure Passive Backplane to chassis.
7. Lift Passive Backplane from chassis.
8. Install replacement Passive Backplane to chassis using hardware you removed in step #4.

CAUTION: *Be careful when installing the power cables in the next step. The black wires on P1 MUST be adjacent to the black wires on P2. If the black wires in each plug are not next to each other, the power plugs are installed BACKWARDS. Powering up the Workstation in this condition can cause extensive damage.*

9. Connect power cables you removed in step #5.
10. Carefully install each PCB you removed in step #4. Reconnect appropriate wires to each PCB.

System Interface PCB

Please refer to **Workstation Interconnect Diagram 00-878981** while reading the following paragraphs. The circuitry described appears in **System Interface PCB Schematic Diagram 00-879054**.

Description

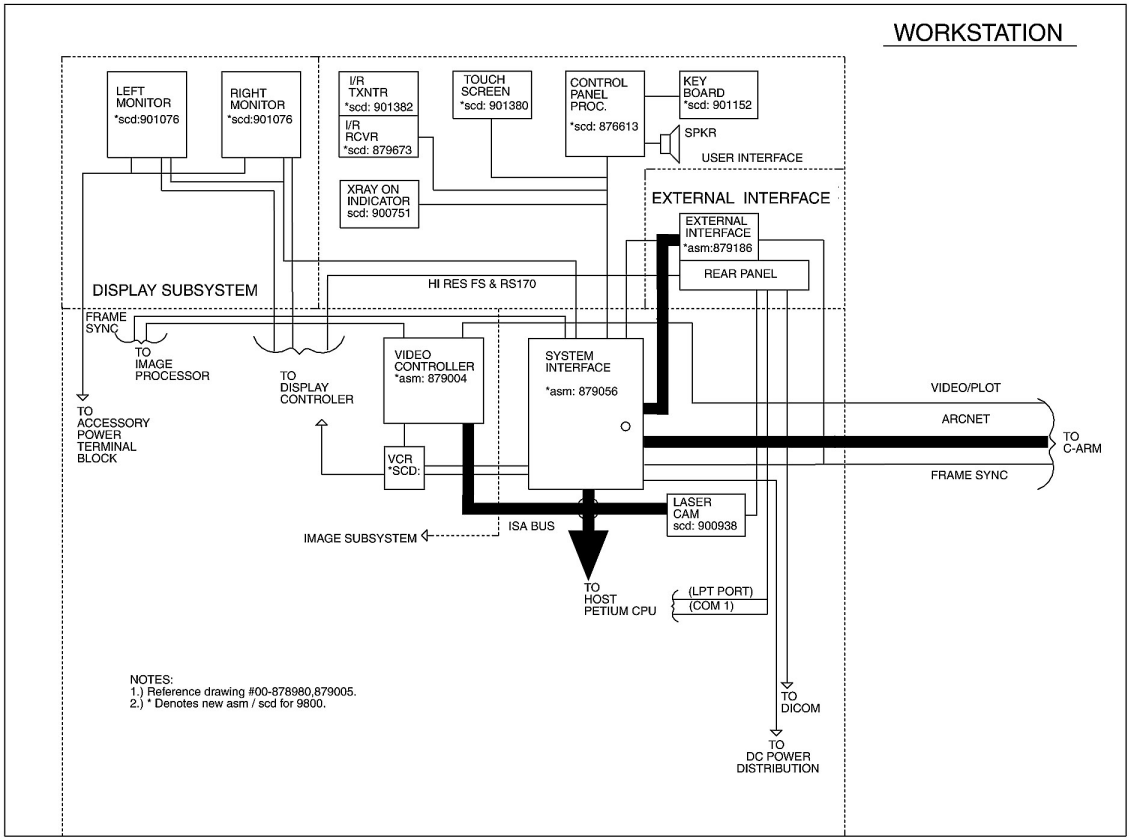
The System Interface PCB is an interface between the Host Controller and peripheral devices. The Host Controller addresses 16 different registers on the System Interface PCB to communicate with the external VCR, access the system ARCNet network, provide real time control of the High Resolution Monitors, and access the Option PROM. In addition, through communication with the System Interface PCB, the Host Controller can monitor a number of Workstation PCB voltages, monitor the temperature at several locations within the Workstation, and control several external devices such as X-ray warning lights and an automatic Dye Injector.

Location

The System Interface PCB connects to the ISA Bus slot 2 on the Host Pentium CPU Motherboard or Passive Backplane.

Circuit Description

The following block diagram shows how the System Interface PCB communicates with other devices in the Workstation.



System Interface Communications

ISA Bus Interface. These connections are the communication path between the Host Controller and the System Interface PCB

RS-232 Ports. The System Interface PCB provides five RS-232 ports. Three of these five serial ports communicate directly over three dedicated UART channels, while the other two serial ports communicate in a multiplexed fashion over a fourth UART channel. The RS-232 channels are assigned as follows:

Port 1: Control Panel Processor

Port 2: Spare (future use)

Port 3: Right Monitor

Port 4: Left Monitor

Port 5: Touch Screen Interface

ARCNet Nodes. The System Interface PCB provides two independent ARCNet nodes. The first node is the 9800 ArcNet Host that communicates with other system ARCNet devices such as those in the generator, and with any external user ARCNet devices that may be attached to the Workstation's rear panel. The second node functions as a Diagnostics gateway that provides a data pathway between the system ARCNet and an RS-232 interface for a laptop computer.

Analog to Digital Inputs. The System Interface PCB has 24 analog-to-digital inputs that each have a 10-bit resolution. These inputs monitor Workstation power supply voltages, two Workstation temperatures, and the room brightness level.

Option PROM. This 32K (8-bit word) device configures the Host Controller's BIOS for operation in the Workstation.

Address and Data Buffers. These devices buffer data between the Host Controller and the System Interface PCB.

Software-Controlled Relay Drive Signals. These signals control relays on the **External Interface PCB** that drive such things as X-Ray On lights, Room in Use lights, contrast injection devices, etc.

Software-Controlled Monitoring. UARTs on the System Interface PCB monitor external conditions such as Left and Right Monitor on, door interlock status, etc. These inputs are protected against transients, surges, etc.

Diagnostic Code Display. The System Interface PCB has two alphanumeric displays for Host Controller diagnostic hexadecimal codes. These displays mount on the front edge of the board so they are easily viewable during system operation.

Parallel VCR Interface. This interface allows the Host Controller to run the optional VCR under program control. The parallel port provides discrete lines for such functions as stop, play, pause, record, etc.

Test Points

There are no test points on the System Interface PCB that can be used to troubleshoot problems.

Circuit Breakers and Fuses

There are no circuit breakers or fuses on the System Interface PCB.

Troubleshooting

The following paragraphs provide a brief description of several possible System Interface PCB failures:

- A failure of decoder U57 prevents the Host Controller from communicating with Workstation peripherals.
- A failure of the ARCNet Controller U37 prevents the Host Controller from communicating with any devices on the internal or external ARCNet.
- A failure of the Quad UART U34 disrupts serial communications between the Host Controller and the High Resolution Monitors, Control Panel Processor, Optional VCR, and any peripheral device connected to the serial port at the rear panel of the Workstation.

Any of the above failures requires replacement of the System Interface PCB.

Removal and Replacement

Replacement of the System Interface PCB is a simple process. Follow these steps:

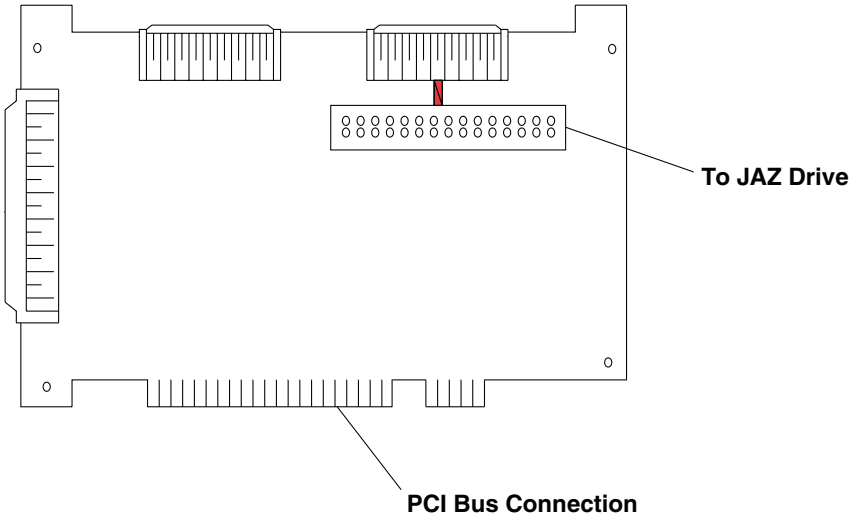
1. Turn off Workstation and disconnect its AC line from electrical outlet.
2. Remove Workstation's Rear Cover.
3. Loosen captive fasteners that secure hinged cover on Electronics Box. Open cover.
4. Identify the System Interface PCB, which occupies ISA Slot 2 in the Host Pentium CPU Motherboard or Passive Backplane.
5. Remove two 6-32 x 3/8" screws that secure System Interface PCB to card rack.
6. Gently pull board forward to release it from the motherboard or backplane. Pull board just far enough to get access to attached cables.
7. Disconnect seven cables from board. Tag cables so you can readily identify where to plug them into replacement board.
8. Place removed System Interface PCB in antistatic bag to prevent ESD damage.
9. Connect cables you removed in step 7 to replacement System Interface PCB.
10. Align edge connectors on replacement board with ISA Slot 2 in motherboard or backplane. Gently push board into place.
11. Connect Workstation to AC line and check system for proper operation.
12. Close cover on Electronics Box and secure cover with captive fasteners.
13. Install Workstation's Rear Cover.

SCSI Controller PCB

The following paragraphs describe the SCSI controller, which serves as an interface between the Host Controller and the optional Jaz drive. The card can support several SCSI devices, although it does not presently do so.

Description

The SCSI Controller PCB enables Ultra SCSI devices to communicate with the Host Controller over the 32-bit PCI local bus.

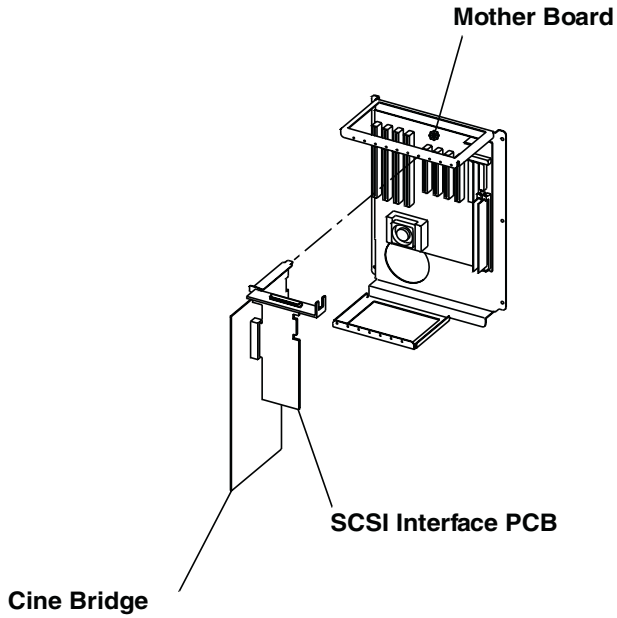


SCSI Controller PCB

Location

The SCSI Controller connects to the PCI bus in slot 7 on the Host Pentium CPU Motherboard or Passive Backplane.

Workstations equipped with the Cine Disk are configured differently with the SCSI Controller mounting in a PCI slot on the Cine Bridge PCB, which mounts in slot 7 of the Host Pentium CPU Motherboard or Passive Backplane. The following illustration shows this arrangement.



SCSI Controller PCB Mounted to Cine Bridge PCB

Circuit Description

The SCSI Controller is a commercially purchased assembly that the manufacturer furnishes to OEC without schematic or circuit description.

Test Points

No test points are available on the SCSI Controller PCB.

Circuit Breakers and Fuses

There are no circuit breakers or fuses on the SCSI Controller PCB.

Troubleshooting

The first indication of failed SCSI Controller PCB is an inoperative Jaz drive. If this happens, first use RUT to make sure the drive is properly activated. Next, physically check the drive to make sure the data and power cables are properly connected. If you've still got a dead drive, replace the SCSI Controller PCB.

Removal and Replacement

Follow these steps to replace the SCSI Controller PCB.

1. Turn off Workstation and disconnect it from AC power outlet.
2. Remove Workstation's Rear Cover.
3. Loosen captive fasteners that secure Electronics Box cover. Open cover.
4. Remove 6/32-3/8-inch screw that secures SCSI Controller PCB.
5. Remove SCSI Controller PCB from Cine Bridge PCB, Host Pentium CPU Motherboard, or Passive Backplane. Disconnect Jaz drive data cable from SCSI Controller PCB.
6. Place removed SCSI Controller PCB in antistatic bag to prevent ESD damage.
7. Connect Jaz drive data cable to replacement SCSI Controller PCB.
8. Install replacement SCSI Controller PCB in appropriate PCI slot. Secure card with screw you removed in step 4.
9. Apply power to Workstation and check for proper Jaz drive operation.
10. Close and secure Electronics Box cover.
11. Install Workstation's Rear Cover.

System IDE Hard Disk Drive

The following paragraphs describe the Workstation's hard disk drive.

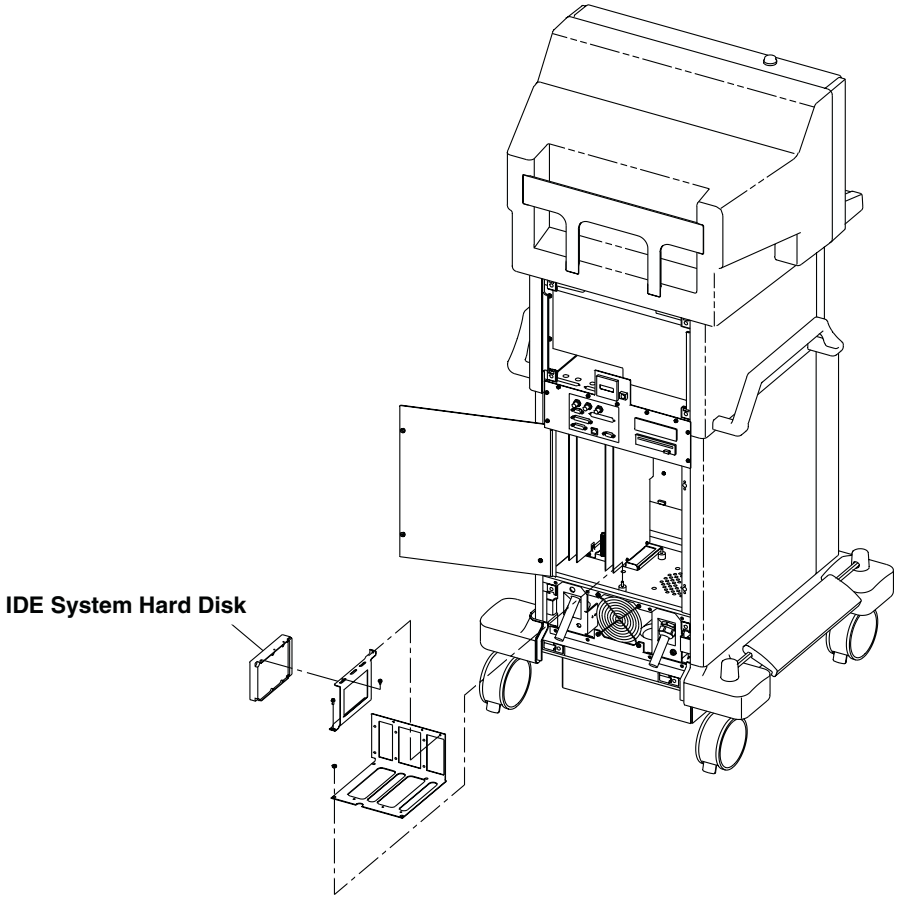
Description

The Workstation's hard disk drive is a standard EIDE device. It has a standard 40-pin EIDE connector and an Ultra ATA interface. It exchanges data directly with the Host Pentium CPU Motherboard or Single Board Computer. It receives DC power directly from the **DC Distribution PCB**.

The Workstation normally boots from the 50-megabyte non-DOS partition of the hard drive, which ships from OEC with the Nucleus® operating system and OEC application software installed.

Location

The hard disk drive mounts in the bottom right-hand corner of the Electronics Box as shown in the following illustration.



Hard Disk Drive Location and Mounting Details

Circuit Description

The manufacturer supplies the hard disk drive with no schematic or circuit details.

Test Points

None available.

Circuit Breakers and Fuses

There are no user accessible fuses or circuit breakers on the hard disk.

Troubleshooting

If the system won't boot up properly, connect the Service Monitor to the VGA connector on the Workstation's rear panel. Then connect the Service Monitor's AC line plug to a convenient outlet. Turn on the Service Monitor and reboot the system. Watch the messages for indications of hard disk failure. If such messages appear, or if the system simply refuses to boot, replace the hard drive.

Removal and Replacement

***Note**: Be sure you're replacing the System IDE Hard Disk and not one of the Cine Disks in the following procedure.*

Follow these steps to replace the hard disk drive:

1. Turn off Workstation and remove its AC power plug from AC outlet.
2. Remove Workstation's Rear Panel.
3. Loosen captive screws that secure Electronics Box cover. Open cover.
4. Loosen screws that secure hard disk drive to its mounting brackets.
5. Carefully pull drive forward to gain access to power and data cable connected to rear of drive. Disconnect both cables from drive.
6. Remove drive from Workstation.
7. Determine how MASTER/SLAVE jumper is installed at rear of removed drive.
8. Set MASTER/SLAVE jumper on replacement drive to match jumper position on original drive.
9. Place original drive in antistatic bag to protect it from ESD.
10. Connect power cable and data cable to replacement drive.
11. Mount replacement drive in Electronics Box. Install and secure mounting screws you removed in step #4.
12. Apply power to Workstation and check for proper hard disk operation.
13. Close and secure Electronics Box cover.
14. Install Workstation's Rear Cover.

3.5-inch Floppy Disk Drive

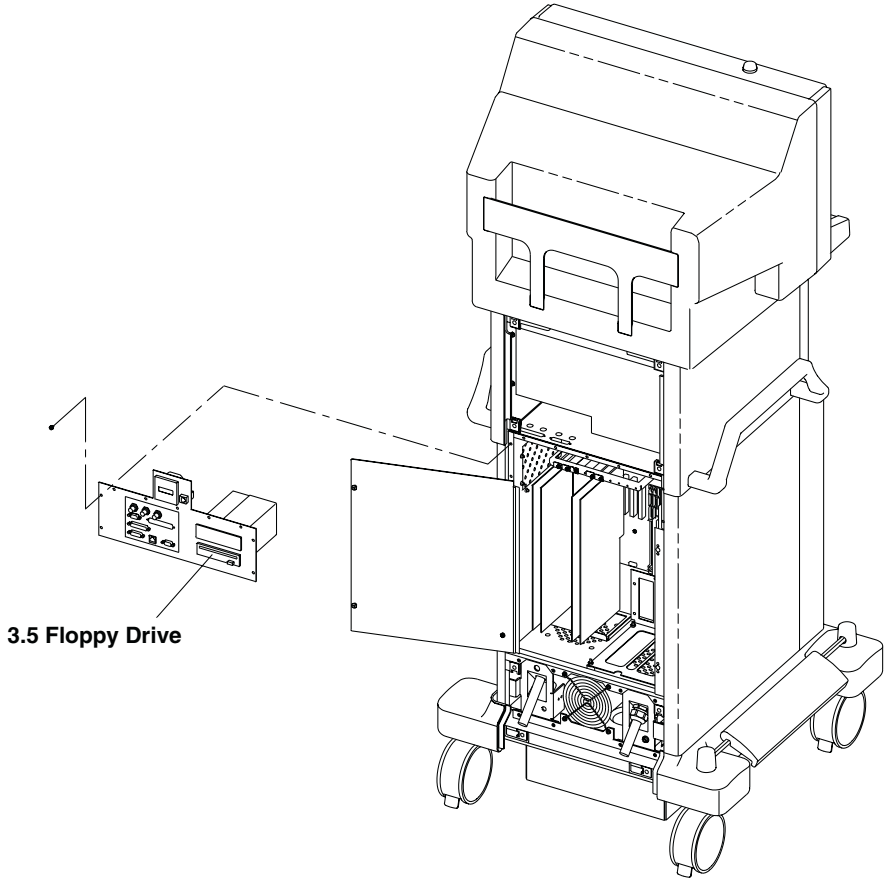
The floppy disk drive is the mounting point for a boot disk, and can also store archived system images.

Description

The floppy drive is a standard 3.5-inch device with the data storage capacity of 1.44 MB. It receives DC power from the DC Distribution PCB, and exchanges data over a 34-conductor flat ribbon cable that connects directly to the Host Pentium CPU Motherboard or Single Board Computer.

Location

The floppy drive mounts in the External Interface Panel, which is located on the rear panel of the Workstation. Please refer to the following illustration.



Floppy Disk Drive Location

Circuit Description

The floppy disk drive is supplied by the manufacturer without a schematic or circuit description. It is very inexpensive, and much more practical to replace than repair.

Test Points

None available.

Circuit Breakers and Fuses

None available.

Troubleshooting

A bad floppy drive is the likely cause when the system fails to read from a floppy disk or write to it. If the system won't start from a boot disk, a bad floppy drive is also likely to be the cause. First check the power and data cable to the floppy drive. Make sure they are both connected and in good condition. If you see nothing wrong with the cables or connectors, replace the floppy disk drive.

Removal and Replacement

Follow these steps to replace the floppy disk drive:

1. Turn off Workstation and remove its AC power plug from wall outlet.
2. Remove left side cover of Workstation. This gives you access to floppy disk drive.
3. Remove four metric 6mm torx screws that secure floppy disk drive to Workstation chassis. Retain these screws for later use.
4. Disconnect power and data cables from floppy disk drive.
5. Pull floppy disk drive through rear panel.
6. Carefully push replacement drive through rear panel.
7. Carefully install power and data cables on replacement drive.
8. Install torx screws you removed in step 3 to secure replacement floppy disk drive to Workstation chassis.
9. Power up Workstation and check floppy disk drive for proper operation.
10. Install left side cover of Workstation.